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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,842	10/29/2003	Joung-Hyun Yeo	Q77421	2497

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
NGUYEN, JIMMY H	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/694,842	YEO, JOUNG-HYUN	
	Examiner	Art Unit	
	Jimmy H. Nguyen	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11 and 13-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11 and 13-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 06/04/2007. Claims 1, 3-11 and 13-19 are currently pending in the application. An action follows below:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-11, and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda et al. (US 6,650,307 B1), hereinafter Toda, and further in view of Tomio et al. (US 5,745,085), hereinafter Tomio.

As to claims 1, 11, 14, 17 and 18, the claimed invention reads on the Toda reference as follows: Akiyama discloses a plasma display apparatus with low power consumption and high speed response (see Fig. 8 and Abstract) comprising **a plasma display panel** (1) driven by a discharge sustain voltage in the form of pulses (best seen Fig. 2); **an analog-digital converter** (a circuit comprising an A/D converter for receiving an analog image signal; see col. 1, lines 45-51 and col. 5, lines 39-43; and a gain control circuit 21; see Fig. 8) digitizing an image signal and producing a digitized image signal; **a plasma display panel drive unit** (an unit comprising at least elements 2-4, 12 and 13, see Fig. 8) converting the digitized image signal into scanning pulses and data pulses for driving the plasma display panel and outputting the scanning and data pulses to the plasma display panel; **a power supply unit** (a portion of a power source 5 for generating signals provided to drivers 2 and 3 as shown in Fig. 8) supplying the discharge sustain

voltage to the plasma display panel drive unit; and **a controlling unit** (a unit comprising elements 22, 23 and a portion of a power source 5 which detects, determines, and provides the voltage and current values to a power control circuit 23, see Fig. 8 and col. 6, lines 3-11), which includes a voltage sensing unit (a portion of a power source 5 which detects, determines, and provides the voltage and current values to a power control circuit, see Fig. 8 and col. 6, lines 3-11) sensing the discharge sustain voltage and discharge current during the sustaining discharge period (see col. 3, lines 36-44) and a power control circuit (23) calculating the power consumption based on the detected (sensed) voltage and current to determine the gain coefficient for adjusting an output gain of the analog-digital converter in response to a variation of the discharge sustain voltage of the power supply unit (see Fig. 8; col. 6, lines 3-11). Toda teaches the power control circuit (23) further comprising a power comparison unit comparing the calculated power consumption with a predetermined limit value PM and a gain adjusting unit outputting the gain coefficient to adjust the output gain of the analog-digital converter depending on the comparison results (see col. 6, lines 15-65). In other words, Toda teaches a power comparison unit instead of a voltage comparison unit as claimed. Accordingly, Toda discloses all the claimed limitations of these claims except that Toda does not expressly teach a voltage comparison unit and a scaler, as presently claimed.

However, Official Notice is taken that both the concept and the advantages of providing a scaler in the plasma display apparatus, for processing or converting the digitized image signal to an image size appropriate to the plasma display panel, are well-known and expected in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention was made

to provide the scaler in the plasma display apparatus of Toda, because this would allow the user to view an input image signal having any size, on the display apparatus.

Further, regarding to the claimed voltage comparison unit, Tomio discloses a related plasma display apparatus (see Fig. 1) comprising a controlling unit (a unit including elements 37, 39, 40; see Fig. 1), which includes a voltage sensing unit (39) (see Figs. 1 and 3) sensing the variation of the discharge sustain voltage and outputting a sensed voltage and a voltage comparison unit (40) comparing the sensed voltage from the voltage sensing unit with a predetermined voltage and outputting comparison results (see Fig. 1; col. 10, lines 1-16). Tomio further teaches the power consumption calculated from the discharge sustain voltage and the current (see col. 9, lines 17-27). Tomio further teaches that the benefit of detecting and comparing the current and the discharge voltage separately is "to provide a display panel of a lower power consumption type which is not affected by the display rate, as well as to provide a display panel capable of displaying an image while maintaining stable brightness and suppressing changes in the brightness regardless of a change in the display rate or a change in the setpoint display voltage Vs, by improving the aforementioned defects inherent in the prior art" (see col. 5, lines 42-49). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the controlling unit of Toda to compare the current and the discharge voltage separately, rather than to compare the power consumption, in view of the teaching in the Tomio reference, because this would provide a display panel of a lower power consumption type which is not affected by the display rate, as well as to provide a display panel capable of displaying an image while maintaining stable brightness and

suppressing changes in the brightness regardless of a change in the display rate or a change in the setpoint display voltage Vs, as taught by the Tomio reference (see col. 5, lines 42-49).

As to claim 13, Toda expressly teaches that when a luminance level of the digitized image signal increases, the power consumption and the gain of the input image signal are reduced (see col. 7, lines 8-15), thereby reducing the discharge sustain voltage.

As to claims 15 and 16, as discussed in the rejection to claim 11 above, Toda discloses all the claimed limitations of this claim except that Toda does not expressly teaches a decoder unit receiving an externally inputted image signal, converting it into the image signal and outputting the image signal, and outputting the image signal to the analog-digital converter for digitizing, as presently claimed. However, Official Notice is taken that both the concept and the advantages of providing a decoder unit in the plasma display apparatus, for receiving an externally inputted image signal, converting it into the image signal and outputting the image signal, and outputting the image signal to the analog-digital converter for digitizing, are well-known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the decoder unit in the plasma display apparatus of Toda, because this would allow the display apparatus to receive a plurality of externally inputted image signals from a plurality of image sources, thereby allowing a user to view a desired image on the display.

As to claim 3, Tomio teaches the voltage sensing unit (39) includes a first resistor (R5) and a second resistor (R6) connected in series between the discharge sustain voltage (Vs) and a ground (see Fig. 3).

As to claim 4, as discussed in the rejection to claim 1 above, Tomio discloses a voltage comparison unit (40) comparing the sensed voltage from the voltage sensing unit with a predetermined voltage and outputting comparison results (see Fig. 1; col. 10, lines 1-16). Tomio's voltage comparison unit does not comprise an operational amplifier, a third resistor, and a fourth resistor, as presently claimed. However, Official Notice is taken that both the concept and the advantages of constructing a voltage comparison unit by using analog elements, an analog operational amplifier inputted with a predetermined voltage at its first input terminal, a third resistor connected between a node commonly connected to the first resistor and the second resistor and a second input terminal of the operational amplifier, and a fourth resistor connected between an output terminal of the operational amplifier and an input terminal of another unit are well-known and expected in the art. It would have been obvious to replace the comparison unit (40) of Tomio with the known analog voltage comparison unit because this would reduce the high cost of the voltage comparison unit using the MPU (35), memory (42), a selector (38), and a converter (36).

As to claim 5, as discussed in the rejection to claim 1 above, Toda teaches the power control circuit (23) comprising an inherent data storage unit storing the gain coefficients (i.e., a gain value of the analog-digital converter) and an inherent microcomputer for supplying a

predetermined power limit value PM for comparison (see col. 6, lines 15-65). Accordingly, Toda in view of Tomio discloses the limitations of this claim.

As to claim 6, see the rejection to claim 4 above.

As to claim 7, see the rejection to claim 5 above.

As to claim 8, see the rejection to claim 13 above.

As to claim 9, Toda expressly teaches that when a luminance level of the digitized image signal increases, the power consumption and the gain of the input image signal are reduced (see col. 7, lines 8-15).

As to claim 10, see the rejection to claim 14 above.

As to claim 19, as discussed in the rejection to claim 1 above, Toda in view of Tomio discloses that the controlling unit adjusts the output gain of the ADC, in response to the variation of the power consumption or the variation of the discharge sustain voltage and the current. Further, since both Toda and Tomio teach **the power consumption calculated from the discharge sustain voltage and the current** (see Toda, col. 6, lines 3-6, and Tomio, col. 9, lines 17-27), Toda and Tomio discloses the power consumption varied in response to the variation of the discharge voltage only, the variation of the current only, or the variation of both the discharge voltage and current. Further, Tomio expressly teaches that by detecting a variation of both current and a variation of the discharge voltage, the control operation of the display panel of a low power consumption type can be executed more correctly and concretely (see col. 9, lines 4-16). Furthermore, the invention of the pending application directs to a plasma display apparatus with low power consumption and concerns to the variation of the discharge voltage only while the power consumption is calculated from the voltage and current. For the above reasons, while

Toda in view of Tomio discloses the controlling unit adjusting the output gain of the ADC in response to the variation of the power consumption or the variation of both the discharge sustain voltage and the current, instead of only in response to the variation of the discharge sustain voltage as presently claimed, one of ordinary skill in the art would have found it obvious to modify the controlling unit of Toda to adjust the output gain of the ADC only in response to the variation of the discharge sustain voltage as desired as to lower the cost of the display device.

Response to Arguments

4. Applicant's arguments filed 06/04/2007 have been fully considered but they are not persuasive.

As to claims 1, 3-11 and 13-18, Applicant argues that since the comparison of the power consumption is necessary to proper operation of Toda, a modification in view of Tomio would destroy the principle of operation of Toda because the power consumption value P, which is based on detected voltage and current at the power source, is necessary for the proper operation and current of Toda (see the amendment, page 12, lines 9-19). While Examiner agrees with Applicant that the power consumption is necessary for the proper operation of Toda, Examiner disagrees that a modification to Toda in view of Tomio would destroy the principle of operation of Toda. Tomio also teaches to calculate the power consumption value P, which is based on detected voltage and current at the power source (see col. 9, lines 17-27). Further, since the power consumption is calculated based upon both the voltage and current, a comparison of the power consumption and a power limit value can be obtained by a comparison of the detected voltage with a voltage limit value and a comparison of the detected current with a current limit value because a power limit value is calculated from a voltage limit value and a current limit

value, or vice versa. In fact, one of ordinary skill in the art would understand that the benefit of separately comparing the detected voltage and current is to avoid the over-limit value of either the voltage or current, which may cause improper operation(s).

Applicant further argues that since Toda teaches the gain of the image signal adjusted depending on detected power values, the gain of the image signal in Toda is not adjusted in response to a variation of the discharge voltage (see the amendment, page 13, lines 12-17). Examiner disagrees because since the detected power value is calculated from the detected voltage and current, as taught by both Toda (see col. 6, lines 3-6) and Tomio (col. 9, lines 17-27), the variation of the detected power value is varied with the variation of the detected voltage, the detected current, or both the detected voltage and current. Further, see Tomio, Summary of the Invention section; col. 9, lines 4-27 and col. 10, lines 1-23.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is 571-272-7675. The examiner can normally be reached on Monday - Friday, 6:30 a.m. - 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHN
July 16, 2007

Jimmy H. Nguyen
Primary Examiner
Technology Division: 2629